

CLAIMS

1. A riding type vehicle characterized in a riding type vehicle including an automatic transmission capable of executing a shift change by a clutch actuator and a shift actuator;

wherein a clutch a clutch operation of which is controlled by the clutch actuator is a multiplate clutch;

wherein the multiplate clutch is provided with urging means for enlarging a partial clutch engagement region of the clutch; and

wherein in the shift change, both of the clutch actuator and the shift actuator are controlled to operate overlappingly.

2. The riding type vehicle according to Claim 1, wherein the urging means for enlarging the partial clutch engagement region is a coil spring.

3. The riding type vehicle according to Claim 1, characterized in that the urging means enlarges the partial clutch engagement region by reducing a rigidity of the multiplate clutch.

4. The riding type vehicle according to Claim 1 wherein the clutch actuator is connected with a control apparatus;

wherein the control apparatus is characterized in controlling the clutch from a first state of starting to

transmit a drive force on a side of an engine by transmitting an operating force to the clutch by way of an operating force transmitting mechanism to a second state of starting to rotate the clutch in synchronism with the side of the engine by making a stroke by a predetermined amount by the clutch actuator; and

wherein the urging means is characterized in being provided to the multiplate clutch to construct a constitution in which when a temperature of the clutch is changed, a first range between a stroke position on a low temperature side and a stroke position on a high temperature side in the first state and a second range between a stroke position on a low temperature side and a stroke position on a high temperature side in the second state are separated from each other.

5. The riding type vehicle according to Claim 1, wherein the clutch actuator is connected with a control apparatus;

wherein the control apparatus is characterized in controlling the clutch from a first state of starting to transmit a drive force on a side of an engine to a second state of starting to rotate the clutch in synchronism with a side of the engine by transmitting an operating force to the clutch by way of an operating force transmitting mechanism by making a stroke by a predetermined amount by the clutch actuator; and

wherein urging means is characterized in being provided to the multiplate clutch to construct a constitution in which when the clutch is worn, a first range between a stroke position

on a side before wearing the clutch and a stroke position on a side after wearing the clutch in the first state and a second range between a stroke position on a side before wearing the clutch and a stroke position on a side after wearing the clutch in the second state are separated from each other.

6. The riding type vehicle according to Claim 1, characterized in that in the overlapping operation, a shift change operation of the shift actuator is executed in a partial clutch engagement region produced by controlling the clutch actuator.

7. The riding type vehicle according to Claim 6, characterized in that a timing of starting the partial clutch engagement region and the shift change operation of the shift actuator are controlled to be synchronized.

8. The riding type vehicle according to Claim 1, wherein the multiplate comprises:

respective clutch disks arranged on a same axis center, made to be able to rotate relative to each other around the axis center, made to be able to be brought into contact with each other and separated from each other in an axial direction of the axis center and cooperatively connected to a drive side and a driven side;

a stopper for hampering the two clutch disks brought into contact with each other from moving in one direction of the axial direction to a predetermined position or further;

a clutch spring for exerting an urge force to the two clutch disks in the one direction to bring to the two clutch disks movements of which are hampered by the stopper into contact with each other; and

urging force releasing means for enabling to release the urge force of the clutch spring exerted to the two clutch disks by inputting an operating force from outside;

wherein the clutch actuator is an actuator for exerting the operating force to the urging force releasing means; and

wherein the urging means for enlarging the partial clutch engagement region is a transmitting torque restricting spring for urging the two clutch disks in other direction of the axial direction to be brought into contact with each other.

9. The riding type vehicle according to Claim 1, wherein the clutch actuator is an actuator for controlling the clutch from a first state of starting to transmit a drive force on a side of an engine to a second state of starting to rotate the clutch in synchronism with the side of the engine by transmitting an operating force to the clutch by way of an operating force transmitting mechanism by making a stroke of a predetermined amount; and

wherein the clutch actuator and the operating force transmitting mechanism are characterized in being arranged at outside of the engine.

10. The riding type vehicle according to Claim 8,

wherein the actuator is an electric motor.

11. The riding type vehicle according to Claim 1, characterized in that the clutch actuator is arranged at inside of the engine of the riding type vehicle.

12. The riding type vehicle according to Claim 8, characterized in that the operating force transmitting mechanism is provided with a first connecting portion provided on a side of the clutch actuator and a second connecting portion provided on a side of the clutch movably in separating and approaching directions, provided with first urging means for urging the two first and second connecting portions in the separating direction, and when the clutch is disconnected, the clutch is constituted to be disconnected by making the two first and second connecting portions approach each other against an urge force of the first urging means by driving the clutch actuator.

13. A riding type vehicle which is a riding type vehicle including an automatic transmission capable of executing a shift change by a clutch actuator and a shift actuator;

wherein the clutch actuator is connected with a control apparatus;

wherein the control apparatus is characterized in controlling the clutch from a first state of starting to transmit a drive force on a side of an engine to a second state of starting to rotate the clutch in synchronism with the side

of the engine by transmitting an operating force to the clutch by way of an operating force transmitting mechanism by making a stroke by a predetermined amount by the clutch actuator; and

wherein the urging means is characterized in being provided with the clutch to construct a constitution in which when a temperature of the clutch is changed, a first range between a stroke position on a low temperature side and a stroke position on a high temperature side in the first state and a second range between a stroke position on a low temperature side and a stroke position on a high temperature side in the second state are separated from each other.

14. A riding type vehicle which is a riding type vehicle including an automatic transmission capable of executing a shift change by a clutch actuator and a shift actuator;

wherein the clutch actuator is connected with a control apparatus;

wherein the control apparatus is characterized in controlling the clutch from a first state of starting to transmit a drive force on a side of an engine to a second state of starting to rotate the clutch in synchronism with the side of the engine by transmitting an operating force to the clutch by way of an operating force transmitting mechanism by making a stroke by a predetermined amount by the clutch actuator; and

wherein the urging means is characterized in being provided to the multiplate clutch to construct a constitution

in which when the clutch is worn, a first range between a stroke position on a side before wearing the clutch and a stroke position on a side after wearing the clutch in the first state and a second range between a stroke position on a side before wearing the clutch and a stroke position on a side after wearing the clutch in the second state are separated from each other.

15. The riding type vehicle according to any one of Claims 1 through 14;

wherein the riding type vehicle is a motor cycle; and

wherein the clutch actuator and the shift actuator are characterized in being controlled by an electronic control portion.

16. The riding type vehicle according to any one of Claims 1 through 14, characterized in that the automatic transmission executes the shift change by an instruction of a driver, or an instruction by an electronic control apparatus electrically connected to the clutch actuator the shift actuator.

17. The riding type vehicle according to Claim 16, characterized in that the electronic control apparatus is electrically connected with a sensor for detecting a situation of the riding type vehicle;

wherein the instruction by the electronic control apparatus is carried out in accordance with a situation of the riding type vehicle.